



Form: Course Syllabus	Form Number	EXC-01-02-01
	Issue Number and Date	<u>2/3/24/2022/2963</u> <u>5/12/2022</u>
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	
	The Date of the Deans Council Approval Decision	
	Number of Pages	9

1.	Course title	Introduction to Microbiology	
2.	Course number	0504204	
3.	Credit hours	3 Theory	0 Practical
	Contact hours (theory, practical)	45 (45 theory, 0 practical)	
4.	Prerequisites/Corequisites	--	
5.	Program title	Doctor of Medicine	
6.	Program code	05	
7.	Awarding institution	The University of Jordan	
8.	School	School of Medicine	
9.	Department	Department of Pathology, Microbiology, and Forensic Medicine	
10.	Course level	Bachelor	
11.	Year of study and semester (s)	2 nd year, 1 st semester.	
12.	Other department (s) involved in teaching the course	-	
13.	Main Learning language	English	
14.	Learning Types	<input type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online	
15.	Online platforms(s)	<input type="checkbox"/> Moodle x Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom	
		<input type="checkbox"/> Others.....	
16.	Issuing/Revision Date	30/12/2023	

**17. Course Coordinator:**

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18. Other instructors:

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19. Course Description and Aims:**A- Course Description:**

This course covers the study of microorganisms with respect to the classification and structure of bacteria, viruses, parasites, and fungi, their characteristics, growth and replication, and their susceptibility to antimicrobials. It also covers the study of the types of microorganisms that cause human disease, their pathogenesis, methods of diagnosis, prevention, and control. The course will also briefly discuss principles of biorisk, biosafety, and biosecurity.

B- Aims:**Foundations of Microbial Biology:**

- Explain fundamental concepts in bacterial, viral, protozoal, and fungal biology, encompassing their structures, metabolic processes, growth patterns, and genetic characteristics.
- Apply this knowledge to the cultivation, classification, and identification of various microorganisms.

Laboratory Proficiency:

- Demonstrate competence in common laboratory procedures relevant to microbiology, including aseptic techniques, microbial staining, and culture methods.

Human Microbiota and Health:

- Explore the human microbiota's composition and significance in maintaining health and contributing to disease processes.

Understanding Infections and Immune Evasion:



- Describe the infection process in detail, emphasizing microbial pathogenesis and the mechanisms microorganisms employ to evade the immune system.

Medical Pathogens and Clinical Relevance:

- Introduce significant medical pathogens, categorizing them by class and providing insights into their pathogenesis, diagnostic approaches, and treatment options.

Sterilization and Antimicrobial Strategies:

- Explain methods of sterilization and the principles underlying antimicrobial therapy, focusing on their applications in infection control.

Biorisk, Biosafety, and Biosecurity:

- Familiarize students with the fundamental principles of biorisk management, biosafety practices, and the concept of biosecurity.

20. Program Intended Learning Outcomes (PLOs) (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program):

1. Demonstrate basic knowledge of normal human structure and function at molecular, genetic, cellular, tissue, organ, system and whole-body levels in terms of growth, development, and health maintenance. Analyze the basic molecular and cellular mechanisms involved in the causation and treatment of human disease and their influence on clinical presentation and therapy.
2. Collect, interpret, document, and communicate accurately a comprehensive medical history, including the psychological and behavioral factors, and a thorough organ-system-specific physical examination inclusive of the mental status of the patient.
3. Integrate and communicate collected clinical information in the construction of appropriate diagnostic and therapeutic management strategies to identify life-threatening conditions ensuring prompt therapy, referral, and consultation with relevant disciplines and skillfully perform basic medical procedures for general practice on patients with common illness, acute and chronic, taking into account environmental, social, cultural and psychological factors.
4. Demonstrate in-depth knowledge of the epidemiology and biostatistics of common diseases, and analyze the impact of ethnicity, culture, socioeconomic factors and other social factors on health, disease and individual patient's health care.
5. Communicate effectively and professionally, both orally and in writing, with patients, their families, and with other healthcare providers utilizing information technology resources in his/her scholarly activities and professional development with the ability to teach others, and to understand and respect other healthcare professionals' roles, and apply the principles of multidisciplinary teamwork dynamics and collaboration.
6. Apply scientific methods including evidence-based approach to the medical practice including problem identification, data collection, hypothesis formulation, etc., and apply inductive reasoning to problem solving and ensure that clinical reasoning and decision making are guided by sound ethical principles.



7. Demonstrate knowledge of scientific research methods and ethical principles of clinical research and be able to write research proposals or research papers.
8. Demonstrate professionally the skills needed for Quality improvement, lifelong learning, and continuous medical education including the ability to identify and address personal strength and weakness, self-assess knowledge and performance, and develop a self-improvement plan.

21. Intended Learning outcomes of the course (CLOs): Upon completion of the course, the student will be able to achieve the following intended learning outcomes:

1. Comprehend Fundamental Microbiological Concepts: Gain a deep understanding of key concepts in microbiology and immunology, including microbial structure, function, growth, and diversity. As well as immunological principles such as innate and adaptive immunity, immunological memory, and immune responses.
2. Analyze Microbe-Immune System Interactions: Develop the ability to analyze and explain the intricate interactions between microorganisms and the immune system, recognizing how pathogens evade or trigger immune responses and the consequences for health.
3. Explain Laboratory Techniques in Microbiology: Describe the techniques and methods commonly used in microbiology laboratories, including microscopy, culture methods, serological assays, molecular diagnostics, and genetic manipulation
4. Apply Knowledge to Clinical Scenarios: Apply microbiological knowledge to clinical scenarios, demonstrating the ability to diagnose infectious diseases, select appropriate treatments, and understand the impact of immunopathology on patient health.

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program):

Program ILOs / ILOs of the course	CLO (1)	CLO (2)	CLO (3)	CLO (4)
PLO (1)	✓			
PLO (2)			✓	
PLO (3)				✓
PLO (4)		✓		
PLO (5)				
PLO (6)				
PLO (7)				
PLO (8)				

23. Topic Outline and Schedule:



محتوى المقرر					
أسبوع	ساعات	المخرجات	المواضيع	طرق التعليم والتعلم	أدوات التقييم
.1	1	1, 2	Lecture 1. Introduction to Medical Microbiology	Classroom Lectures	Exam MCQs and Discussion
	1	1, 2	Lecture 2. Bacterial Structure	Classroom Lectures	Exam MCQs and Discussion
	1	1, 2	Lecture 1. Intro to Virology	Interactive Videos and Animations	Exam MCQs and Discussion
.2	1	1, 2	Lecture 3. Bacterial growth	Classroom Lectures	Exam MCQs and Discussion
	1	1, 2	Lecture 4. Bacterial Metabolism and physiology	Interactive Videos and Animations	Exam MCQs and Discussion
	1	1, 2	Lecture 2. Viral pathogenesis	Classroom Lectures	Exam MCQs and Discussion
.3	1	1, 4	Lecture 5. Sterilization, Disinfection, and Antisepsis	Classroom Lectures	Exam MCQs and Discussion
	1	1, 4	Lecture 6. Bacterial classification, identification	Classroom Lectures	Exam MCQs and Discussion
.4	1	1, 2	Lecture 7. Bacterial genetics	Interactive Videos and Animations	Exam MCQs and Discussion
	1	1, 2, 3	Lecture 8. Human microbiota	Classroom Lectures	Exam MCQs and Discussion
	1	1, 2, 4	Lecture 4. Important viral pathogens	Classroom Lectures	Exam MCQs and Discussion
.5	1	1, 2	Lecture 9. Bacterial Pathogenesis	Classroom Lectures Game- based learning	Exam MCQs and Discussion
	1	1, 2, 4	Lecture 10. Biorisk Management	Interactive Videos and Animations	Exam MCQs and Discussion
	1	1, 2, 4	Lecture 5. Important viral pathogens	Classroom Lectures Game- based learning	Exam MCQs and Discussion
.6	1	1, 2	Lecture 11. Mycobacteria	Classroom Lectures	Exam MCQs and Discussion
	1	1, 2, 4	Lecture 12. Intro to mycology	Classroom Lectures	Exam MCQs and Discussion
	1	1, 2, 4	Lecture 6. Important viral pathogens	Interactive Videos and Animations	Exam MCQs and Discussion



Exam MCQs and Discussion					.7
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 13. Mycology	1, 2	1	
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 14. Mycology 2	1, 2, 4	1	
Exam MCQs and Discussion	Classroom Lectures	Lecture 7. Important viral pathogens	1, 2, 4	1	
Exam MCQs and Discussion	Classroom Lectures	Lecture 15. Parasitology	2, 3	1	.8
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 16. Parasitology 2	2, 4	1	
Exam MCQs and Discussion	Classroom Lectures	Lecture 8. Important viral pathogens	2, 4	1	
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 17. Staphylococci	1, 2, 4	1	.9
Exam MCQs and Discussion	Discussion sessions	Lecture 18. Streptococci and enterococcus	1, 2, 4	1	
Exam MCQs and Discussion	Discussion sessions	Lecture 9. Important viral pathogens	1, 2, 4	1	
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 19. Spore forming Gram positive rod	1, 2, 4	1	.10
Exam MCQs and Discussion	Classroom Lectures	Lecture 20. Non-Spore forming Gram positive rods	1, 2, 4	1	
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 10. Important viral pathogens	1, 2, 4	1	
Exam MCQs and Discussion	Classroom Lectures	Lecture 21. Enterobacteriaceae	1, 2, 4	1	.11
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 22. Campylobacter, Helicobacter, and vibrio	1, 2, 4	1	
Exam MCQs and Discussion	Classroom Lectures	Lecture 11. Important viral pathogens	1, 2, 4	1	
Exam MCQs and Discussion	Classroom Lectures	Lecture 23. Pseudomonas and opportunistic pathogens, Legionella, Bortedella	1, 2, 4	1	.12



Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 24. Spirochetes and intracellular pathogens	1, 2, 4	1	.13
Exam MCQs and Discussion	Classroom Lectures	Lecture 12. Important viral pathogens	1, 2, 4	1	
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 27. microbiology revision	1, A3	1	
Discussion	Interactive Videos and Animations	Lecture 28. microbiology revision	1, 2, 4	1	
Exam MCQs and Discussion	Classroom Lectures	Lecture 13. Important viral pathogens	1, 2, 4	1	
Exam MCQs and Discussion	Interactive Videos and Animations	Lecture 29. Introduction to the microbiology lab, sterilization and disinfection	1, 3, 4	1.5	.14
Online activities and assignments	Interactive Videos and Animations	Lab 2. Gram positives growth media and biochemical tests	1, 2, 4	1.5	
Exam MCQs and Discussion	Interactive Videos and Animations	Lab 3. Gram negatives growth media and biochemical tests	1, 3, 4	1.5	.15
Exam MCQs and Discussion	Interactive Videos and Animations	Lab 4. Antibiotic susceptibility testing	1, 2, 4	1.5	

24. Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Midterm exam (Multiple choice question (MCQ)-based)	40%	Weeks 1-7	1,2,3,4,5	Weeks 1-7	In-person
Final exam (Multiple choice question (MCQ)-based)	60%	Weeks 9-15	3,4,5,6	Weeks 9-15	In-person

25. Course Requirements



- Class room Lectures
- Internet connection
- Online educational material using Microsoft Teams platform (Electronic Videos and Activities)

26. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Class room Lectures
- Interactive Videos and Animations
- Online activities and assignments
- Open Laboratory sessions
- Discussion sessions and forums
- Game- based learning

27. Course Policies:

A- Attendance policies:

Attendance will be monitored by the course coordinator. Attendance policies will be announced at the beginning of the course.

B- Absences from exams and handing in assignments on time:

Will be managed according to the University of Jordan regulations. Refer to <http://registration.ju.edu.jo/Documents/daleel.pdf>

C- Health and safety procedures:

Faculty Members and students must at all times, conform to Health and Safety rules and procedures.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this course and also integrity in your behavior in and out of the classroom. Students violate this policy would be subjected to disciplinary action according to University of Jordan disciplinary policies

E- Grading policy:

Grade-point average, Rules are preset by the Faculty and Department Councils

F- Available university services that support achievement in the course:

Availability of comfortable lecture halls, data show, internet service and E learning website <https://elearning.ju.edu.jo/> .

28. References:



- 26th or 27th or any other recent edition of *Jawetz, Melnick, & Adelberg's Medical Microbiology*.
- Black, Jacquelyn G., Black, Laura J. *Microbiology: principles and explorations*/Jacquelyn G. Black. —9th ed.
- 7th or 8th or any other recent edition *Murray's medical microbiology*.
- Reviews, articles, and videos referred to in-lecture.

28. Additional information:

- Development of CLOs is promoted through the following teaching and learning methods:
 - In-person lectures.
 - Online lectures on YouTube.
 - Online meetings on Microsoft Teams.
 - Microbiology lab demonstrations.
 - Voluntary assignments.

In general, each week will have 3 lectures, 2 of which will be dedicated to bacteriology/mycology/parasitology, and 1 to virology.

Name of Course Coordinator: **Anas Abu-Humaidan** Date **31/12/2023** Signature:

Head of Department: ----- Signature: -----

Head of Curriculum Committee/Faculty: ----- Signature:

Dean:----- Signature: -----